No. 292 BULLETIN OF THE AGRICULTURAL EXTENSION SERVICE, THE OHIO STATE UNIVERSITY FEBRUARY, 1948

The Periodical Cicada

By
T. H. PARKS, *Extension Entomologist*

Commonly called the "Seventeen-year Locust," the Periodical Cicada is due in Eastern Ohio in 1948.

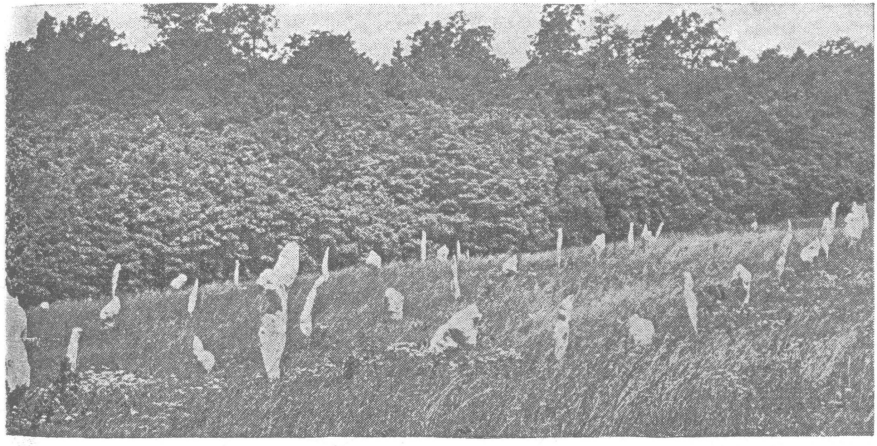

Fig. 1.—Young fruit trees wrapped with cheesecloth to protect them from attack by periodical cicada.

THE periodical Cicada, better known as the 17-year locust, is due for a visit to *Eastern* Ohio during 1948. This insect is distinctly an American species and found only in the eastern part of the United States. The species is known to be divided into 22 distinct broods, each of which appears in different years and over different regions. They appear but once in 17 years in the northern states and once in 13 years in the southern states. The cicadas that will appear in *Eastern* Ohio during the coming summer belong to what is

THE OHIO STATE UNIVERSITY AND THE U. S. DEPARTMENT OF AGRICULTURE, COOPERATING
AGRICULTURAL EXTENSION SERVICE, H. C. RAMSOWER, *Director*, Columbus, Ohio
Printed and distributed in furtherance of Acts of May 8 and June 30, 1914

known as Brood XV. This is the largest of the broods which visit Ohio. It last appeared in 1931, when it seriously injured young fruit trees and the terminal branches of some of our forest trees.

It will be a common sight again this year to see forest trees with a fringe of dead leaves on the edge of the trees due to the mutilation of the terminal twigs caused by the female cicadas in laying eggs. The insects will appear in southeastern Ohio about May 15, in east central counties about May 25, and in northeastern Ohio early in June.

During most of June many of the cicadas will be assembled in swarms located high in the forest trees and the "music" made by the males during the day will be an interesting experience for those who have not previously listened to the "song" of the 17-year cicada. This music is really instrumental in classification, being produced by vibrating a pair of parchment-like membranes or drumheads, located beneath the bases of the wing. The noise made by a swarm of these locusts is so loud and continuous as to attract immediate attention.

Egg Laying Process Injures Trees

The female is equipped with a long sword-like egg-laying tube, which is inserted with great skill into twigs and branches of forest and fruit trees. Through this appendage, eggs are passed to the fibrous nest which has been made previously by the sharp ovipositor. This instrument is inserted and withdrawn repeatedly until a suitable pocket has been made in the branch and from 24 to 28 eggs are thrust into this pocket. A few strands of wood fiber usually protrude and the egg nests are placed in a longitudinal row along the branch. Typical egg scars appear as in Fig. 2. This mutilation kills many of the smaller twigs. The eggs hatch in about 7 weeks. The little nymph or tiny cicada which emerges from the shell, crawls to the twig surface from which it later falls or is blown to the ground.

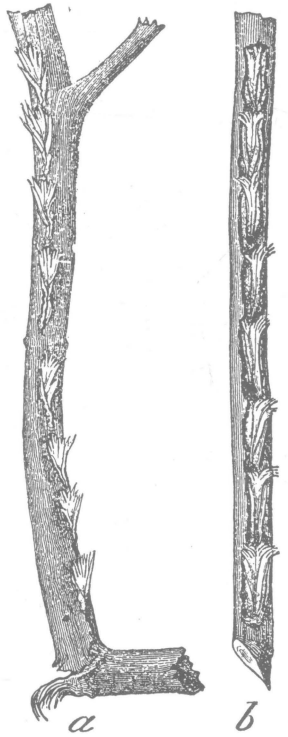

Fig. 2.—(a) Twig showing recent egg punctures from front and side, and illustrating manner of breaking. (b) Twig showing older punctures, with retraction of bark and more fully displaying the arrangement of fibers. (After Riley.)

Seventeen Years Underground

The nymph wanders over the ground and soon disappears into a crack in the soil, boring its way downward to a depth of from 8 to 18 inches. Here it constructs a cell along the side of a live root, upon which it feeds during its long period of underground life. It sucks sap usually from the root of some shrub or forest tree and enlarges its underground cell or home as its growth requires. It does not move about extensively, but subsists at the expense of the root, casting its skin six times during the 17 years of its underground existence.

The insects never appear above ground ahead of scheduled time, but in the spring of the seventeenth year they work their way to just beneath

the surface and construct cells in which to await their time for emergence. When emergence starts they will be found issuing from the ground in large numbers. They emerge for several evenings in May, commencing about 6 or 7 p. m. and continuing through the period of twilight and slightly after.

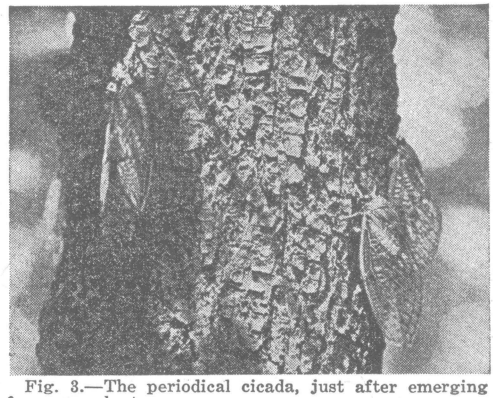

Fig. 3.—The periodical cicada, just after emerging from nymph stage.

Their chief aim is to find a tree, possibly the same one on which the eggs were laid 17 years before, and crawl a few inches up its trunk, or even to the lower limbs and branches. They then attach themselves to the bark or leaf for a brief rest. Here, within 30 minutes to an hour after emerging from the soil, the back of the nymph splits open and the winged cicada emerges to look upon a new world, which it is privileged to occupy for only a brief period of three to four weeks.

During this time the insects collect in swarms and fly from tree to tree with the males singing merrily. It is during this period that mating and egg laying occur. They do not feed in the adult stage. By the middle of July, they have all disappeared and we see and hear nothing more of this brood unless we live 17 years longer.

Each Brood Is Mapped and All Are Facing Extinction

Fig. 4.—Shaded area indicates where periodical cicada Brood XV will appear in 1948.

The map shown herewith indicates the known distribution of the brood which will visit Ohio this year. It has been well charted by entomologists, including the late Professor H. A. Gossard, who took great pains to collect information about the brood during its visitation in 1914 and by the writer in 1931. We must not confuse this with the brood which will come in Western Ohio in 1953. The latter brood will not comprise as high cicada population as the brood of the present year. There are four broods present in Ohio. All are rapidly disappearing, owing to the cutting out of timber on agricultural land. Cutting of timber removes its food supply and no doubt results in the death of many partially grown young, which require living roots upon which to feed. In hill counties, where timber has been undisturbed, the periodical cicada is apparently as abundant as it was 100 years ago.

Toward the end of the period of flight, the colonies are often found by and gradually succumb to attacks of insectivorous birds, until frequently the ground below some trees is strewn with mutilated bodies of dead cicadas.

Some superstitious reports are circulated regarding the 17-year cicada. One rumor is, that should a person be "stung" by the cicada his life would be in danger. This is a false impression, for these insects cannot sting a person and the sword-like appendage of the female is for the purpose of puncturing twigs in which to lay eggs. Another *superstition* is that the marking present on the wings of the insect, which resembles the letter "W," foretells that a war will come in the near future.

Young Fruit Trees Should Be Protected

During the visitation of this brood in 1914 and 1931 very serious damage was caused by the females through laying their eggs in the twigs and branches of young fruit trees in the midst of an old orchard or adjoining a woodland. Even mature fruit trees were injured, but, owing to their size, serious permanent damage did not result. In the case of young trees, deformity developed and it was several years before such trees could be trained to develop a suitable framework after the mutilation caused by the cicadas. Not all young orchards were injured, because the insect did not find all orchards, but many were so injured as to require several years to outgrow it. Injury was most severe where young trees were adjacent to, or near forest areas and the insects migrated to the fruit trees after emerging in the forests.

Young trees, situated in favorable locations to receive damage this year, should have their branches tied in a compact mass and encased in cheesecloth, or other suitable protective material until the damage of the brood is past. Where young trees will not be thus protected, very little or no pruning should be done in order that the seriously injured branches may be later removed or pruned in such a way as to correct the shape of the scarred trees. Growers are advised to plant young trees as usual and protect them if their location makes it necessary. Some newly set blocks of orchards will not need such protection.

New Insecticides to Be Tried

New organic insecticides, such as DDT, have not been tested against the periodical cicada in Ohio. However, we are informed that the dilution of DDT now recommended for controlling codling moth will not kill these cicadas.

It is possible that strong suspensions of one of these new materials, sprayed on the trunk and lower limbs of old fruit trees where the insect was present in 1931, may destroy the newly emerged insects before they become active. The application would have to be made just previous to their emergence and would be designed to kill the cicadas resting on the trunks and scaffold limbs before they move away.